

Serial No. 09/788,547

REMARKS

Claims 1-10 are pending in this application, of which claims 1, 3 and 6 have been amended. Reconsideration of the rejections in view of these amendments and the following remarks is respectfully requested.

Attached hereto is "Version with Markings to Show Changes Made," which is a marked-up version of the changes made to the claims by the current amendment.

Rejections under 35 USC §112, Second Paragraph

In items 2-4 of the Office Action, claim 3 was rejected under 35 USC §112, second paragraph, as being indefinite because there is insufficient antecedent basis for the limitation "a magnetization-varying portion" in line 4.

Claim 3 has been amended to give sufficient antecedent basis. Thus, this rejection has been overcome.

Rejections under 35 USC §103(a)

Claims 1-10 were rejected under 35 U.S.C. §103(a) as being obvious over Jeong (U.S. Patent No. 6,340,854) in view of Hoffman (U.S. Patent No. 4,645,960).

The Office Action admits that Jeong does not show "a shaft formed partly or wholly of a ferromagnetic substance," "the fluid bearing is magnetic fluid oil impregnated into the gap and the porous sleeve including a ferromagnetic material" and "wherein a ferromagnetic substance included in the shaft is locally magnetized so as to create magnetic flux density gradient that is set at a maximum on the bearing surface of the porous sleeve and decreases gradually as it stays away

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therefrom.” Hoffman is cited for allegedly disclosing these recitations. Hoffman explains about the magnetization at column 2, lines 47-55 as follows:

The bearing 10 is magnetized with a polarity configuration wherein **the pole faces are on the outer surface 16 and the inner surface 18** thereof. Such polarity configuration produces a magnetic field having both radial and axial components within the ferrofluid 14, and the axial components are directed toward the center of the bearing bore 20. The magnetic field is indicated at 24 in FIG. 3. The magnetic field holds the ferrofluid 14 within the bore 20.

In Hoffman, the sleeve is magnetized with a polarity configuration wherein the pole faces are on the outer surface 16 and the inner surface 18.

Claim 1 has been amended to recite “the shaft is locally magnetized in a direction parallel to the shaft” and claim 6 to recite “the sleeve is locally magnetized in a direction parallel to the shaft.”

Also, the Office Action alleged that Hoffman discloses “porous sleeve (10).” Nothing in Hoffman, however, teaches or suggests that the sleeve (10) is porous.

Jeong and Hoffman do not teach or suggest at least “a substantially solid porous sleeve faced to the shaft with a bearing portion with a minimum gap provided therebetween” and “wherein a ferromagnetic substance included in the shaft is locally magnetized in a direction parallel to the shaft so as to create magnetic flux density gradient that is set at a maximum on the bearing surface of the porous sleeve and decreases gradually as it stays away therefrom” as recited in claim 1 and “wherein a surface of the bearing portion of the sleeve is locally magnetized in a direction parallel to the shaft so as to create magnetic flux density gradient that is set at a maximum on the bearing surface of the porous sleeve and decreases gradually as it stays away therefrom,” as recited in claim 6.

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At least for these reasons, claims 1 and 6 patentably distinguish over the cited references. Claims 2-5 and 7-10 also patentably distinguish over the cited references for at least the same reasons.

It is submitted that all claims of the present invention patentably distinguish over the cited references. Thus, all pending claims are in condition for allowance. Reconsideration of the rejections, withdrawal of the rejections and an early issue of a Notice of Allowance are earnestly solicited.

If, for any reason, it is felt that this application is not now in condition for allowance, the Examiner is requested to contact Applicant's undersigned attorney at the telephone number indicated below to arrange for an interview to expedite the disposition of this case.

In the event that this paper is not timely filed, Applicant respectfully petitions for an appropriate extension of time. The fees for such an extension or any other fees which may be due with respect to this paper, may be charged to Deposit Account No. 01-2340.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

Claims 1, 3 and 6 have been amended as follows:

1 1. (Amended) A magnetic fluid bearing motor provided with a bearing assembly, the
2 bearing assembly comprising:
3 a shaft formed partly or wholly of a ferromagnetic substance;
4 a substantially solid porous sleeve faced to the shaft with a bearing portion with a
5 minimum gap provided therebetween; and
6 magnetic fluid oil impregnated into the gap and the porous sleeve; and,
7 wherein a ferromagnetic substance included in the shaft is locally magnetized in a direction
8 parallel to the shaft so as to create magnetic flux density gradient that is set at a maximum on the
9 bearing surface of the porous sleeve and decreases gradually as it stays away therefrom.

3. (Amended) The magnetic fluid bearing motor as claimed in claim 2, wherein the bearing portion has a groove for generating dynamic pressure formed on a surface of the shaft or the sleeve and a the magnetization-varying portion is arranged in a position of the shaft that corresponds to the groove.

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1 6. (Amended) A magnetic fluid bearing motor provided with a bearing assembly, the bearing
2 assembly comprising:
3 a substantially solid porous sleeve including a ferromagnetic material;
4 a shaft faced to the sleeve with a bearing portion with a minimum gap provided therebetween;
5 and
6 magnetic fluid oil impregnated into the gap and the porous sleeve; ~~and the like;~~
7 wherein a surface of the bearing portion of the sleeve is locally magnetized in a direction
8 parallel to the shaft so as to create magnetic flux density gradient that is set at a maximum on the
9 bearing surface of the porous sleeve and decreases gradually as it stays away therefrom.